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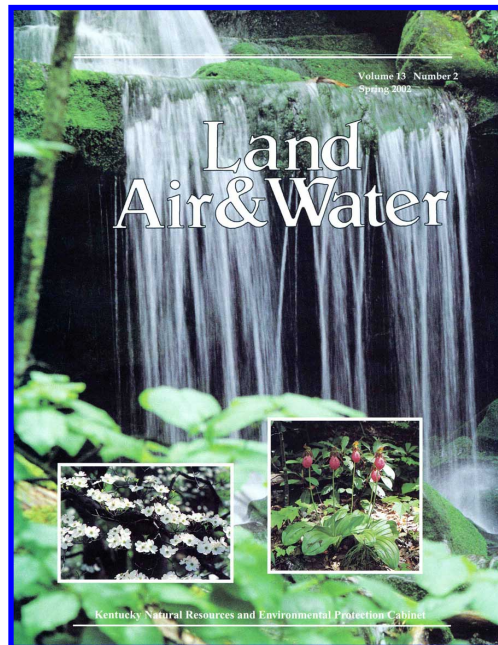
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Land Air & Water magazine

Spring 2002 Issue

Vol. 13, No. 2



Cover of the Spring 2002 issue

Read about the [cover photos by Merle Wasson](#),
Division of Waste Management.

Land, Air & Water is a quarterly publication focused on the Kentucky Natural Resources and Environmental Protection Cabinet's work to preserve and protect Kentucky's land, air and water resources. Contact the editor, Cindy Schafer (e-mail cynthia.schafer@mail.state.ky.us) to add your name to the mailing list or to change a

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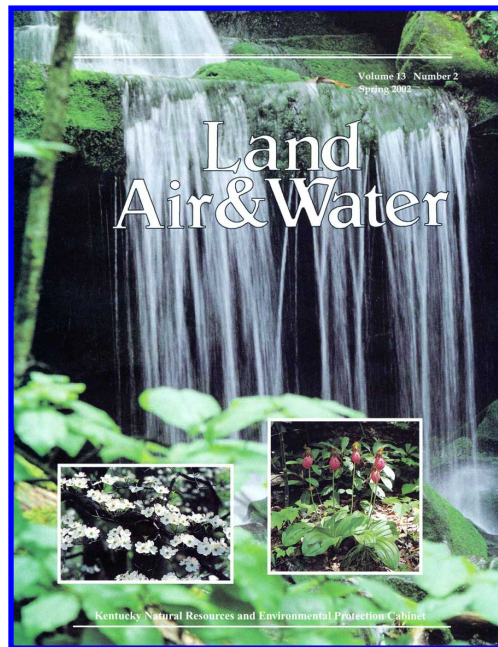
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On the Cover



Cover of the Spring 2002 issue

Click on it to see it enlarged.

Photos by Merle Wasson, Division of Waste Management

Main photo: This waterfall, photographed in the Red River Gorge near the Nada Tunnel, is beautiful especially during wet seasons.

Insets: This flowering dogwood (*Cornus florida*) was photographed in the Cascade Caverns State Nature Preserve. The Pink lady's-slipper (*Cypripedium acaule*) was photographed near the main trail at Natural Bridge State Resort Park.

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2003 Governor's Conference on the Environment

The Natural Resources and Environmental Protection Cabinet has scheduled the next Governor's Conference on the Environment for Oct. 27-28, 2003, at the Embassy Suites Lexington.

The cabinet has decided to forgo a conference this year in light of the budget considerations impacting all of state government. Next year, the conference will continue to present topics that are important to the Commonwealth's environment and its citizens. The Governor's Environmental Excellence Awards will also be presented during the 2003 conference to individuals, groups, government agencies and industries that have made strides in sustaining the environment of Kentucky.

The [NREPC Web site](#) will feature more information on the 2003 conference as it becomes available. Mark your calendars now for Oct. 27-28, 2003, and plan to join us.

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A glance back at 2001: environmentally speaking

As we take a look at some environmental issues the Natural Resources and Environmental Protection Cabinet (NREPC) dealt with last year, we find that some of them were very beneficial and will continue to have a positive impact on the Commonwealth's environment. Others, while challenging, have caused us to explore new ways to provide a healthier, cleaner state that all Kentuckians deserve. Here are a few issues that topped our list. Click on each photo to see it enlarged.

By Cindy Schafer, Office of the Secretary



Power Plants — Since 1999, the NREPC has received 29 permit applications for new or expanding power plants. Some of these are 'merchant' power plants that generate electricity to sell to other areas of the country. In June 2001, Gov. Paul Patton imposed a moratorium that would temporarily halt the issuance of all new permits. The moratorium directed the cabinet, along with the Public Service Commission, to assess the environmental impacts of the proposed plants and to determine whether Kentucky's power grid could handle the increased load of the plants. Comprehensive reports were completed by the agencies in December. According to the NREPC report, "the cabinet has made specific recommendations that will help ensure the protection of public health and the environment from existing and proposed power generation. Implementation of these recommendations will reduce impacts from the existing power plants and allow the construction of the proposed power plants without posing an unacceptable impact on Kentucky's citizens and the environment."

See the [*NREPC report on power plants*](#)

Vehicle Emissions Testing — The VET program identifies and requires repairs of polluting vehicles that contribute to ground-level ozone and smog problems. The Northern Kentucky Emissions 4Check program, which includes Boone, Campbell and Kenton counties, has completed its first testing cycle. An estimated 200,000 vehicles were required to take the emissions test —testing once every two years (odd-year models in odd-numbered years and even-year models in even-numbered years). This test analyzes tailpipe emissions for hydrocarbons and carbon monoxide, checks the fuel system for vapor leaks and inspects for tampering of pollution-control devices. The failure rate averages about 7 percent for all vehicles, ranging from near-zero percent for new vehicles and nearly 40 percent for vehicles falling between the years of 1968-1984. The program expects to reduce emissions of ozone-forming pollutants from vehicles by nearly two tons per day.

See the [*Division for Air Quality Web site*](#) or contact [*Parker Moore*](#) for more information.

Brownfields — One important environmental bill became law last year during the 2001 Kentucky General Assembly. The Voluntary Environmental Remediation Act (VERA) hopes to encourage the voluntary cleanup of contaminated properties, or brownfields. Because brownfields are a liability, the VERA program provides clear guidelines for volunteers who wish to redevelop or clean up the property. Upon completion of the cleanup, the volunteer receives liability protection from the cabinet in the form of a covenant not to sue. The cabinet's Department for Environmental Protection is currently developing regulations and risk-based screening numbers required to implement the statute. The law took effect last June, and volunteers are eligible to begin participating.

For more information, see the Web sites for the [*Division of Waste Management*](#) and the [*U.S. Environmental Protection Agency*](#).

Kentucky Certified Clean Counties Program — In October, Washington County became the first Certified Clean County in Kentucky. The Certified Clean County program provides grant money to counties demonstrating a commitment to eliminate illegal dumps. In order for counties to receive state assistance, they must engage a mandatory garbage collection program; commit to cleaning up all identified illegal dumps in their county; hire a solid waste coordinator with enforcement powers; and establish a committee of representatives from local business, education, agriculture and other concerned citizens to promote awareness. Menifee County has also earned the certified clean status.

See the [*Division of Waste Management Web site*](#) or contact [*Cathy Guess*](#) for more information.



Waste Tires — The NREPC announced its partnership with Owensboro Municipal Utilities (OMU) to help rid the state of waste tires by burning them as fuel to create electricity. This partnership will benefit Kentuckians by eliminating large tire piles, which are fire hazards and ideal breeding grounds for mosquitoes. Kentucky generates about four million waste

tires each year. This new partnership is the first in what cabinet officials hope will be several statewide scrap-tire-marketing partnerships.

See the [Division of Waste Management Web site](#) or contact [Fred Kirchhoff](#) for more information.

Kentucky Nonpoint Source Management Program — The Kentucky Division of Water developed a five-year plan for reducing nonpoint source (or runoff) pollution in the state. By receiving EPA's support, Kentucky will be able to apply for additional grant money for implementing pollution control projects and programs. Cooperation on the part of many agencies and organizations helped Kentucky clean up three streams that were listed as "impaired" waters. Now these streams meet water quality standards.

Contact [Corrine Wells](#) for more information.



Land Preservation — One of the biggest accomplishments last year for the Kentucky State Nature Preserves Commission (KSNPC) was the acquisition of another tract of land at Blanton Forest. Essentially, this tract of land doubled the size of the dedicated state nature preserve in Harlan County. Last fall, the preserve was finally opened to the public for hiking daylight to dusk. KSNPC also celebrated its 25th anniversary. Along the way it has dedicated 42 nature preserves, totaling an astonishing 16,818 acres.

See the [Blanton Forest Web site](#), and [Kentucky State Nature Preserves Commission Web site](#) or contact [Cecilia Mitchell](#) for more information.

Slurry Impoundment Investigations — As a result of the Martin County coal slurry spill in October 2000, the cabinet's Department for Surface Mining Reclamation and Enforcement (DSMRE), along with the federal Office of Surface Mining, examined 113 impoundments in the state last year.

The cabinet's Environmental Response Team has continuously dealt with the Martin County situation since October 2000. They finally completed their emergency cleanup phase last year.

Contact [Pam Carew](#) for more information.

Noncoal Moratorium — In September, Gov. Patton issued an order to temporarily halt permits for noncoal mining. Noncoal resources include limestone quarries, sand and gravel operations, and clay pits. The DSMRE has until July 15, 2002, to conduct a review of the current laws and regulations related to noncoal mining. Some changes already recommended include bonding, fencing and the reduction of highwalls.

See the [DSMRE Division of Field Services Web site](#) or contact [Roy McQueary](#) for more information.

Mine Blasting — Blasting is recognized as the most dangerous part of mining. Flyrock, or rocks that fly or roll from the mine site during a blast, has been associated with an increasing number of incidents at mining operations. In response to this issue, the DSMRE placed increased emphasis on the Kentucky Blasting Oversight Program to prevent environmental harm or injury. Consequently, every cabinet inspector has received additional blasting inspection and oversight training. This will continue to be a DSMRE priority.

Contact [***Ralph King***](#) for more information.

Electronic Reporting on Mine Inspections — The DSMRE field personnel began using electronic media for mine inspection reports and violations as an ongoing part of the EMPOWER Kentucky initiative. EMPOWER Kentucky is Gov. Patton's initiative to make state government more efficient and effective by streamlining how services are delivered to Kentucky taxpayers.

See the [***DSMRE Division of Permits Web site***](#) or contact [***Dave Johnson***](#) for more information.



Forest Fires — Kentucky faced its worst forest fire season in 15 years. Eastern and southeastern Kentucky received the greatest amount of damage totaling nearly 179,000 charred acres. The state was fortunate to have the help of the Kentucky National Guard, which provided 200 soldiers and six aircraft to assist on the ground and in the air, as well as numerous engines and fire crews from other states. A staggering 70 percent of the fires were caused by arson and investigations are still ongoing.

Contact [***Gwen Holt***](#) for more information.

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Cleaning up the creative way!

Winning posters -- Click on each to see it enlarged.



Grades 1-2 winner, Blake Parmley, Wayne County



Grades 3-5 winner, Coltin Franklin, Webster County



Grades 6-8 winner, Brittney Hurt, Perry County
Photos by Cindy Schafer, Office of the Secretary

By Kerry Holt, Office of the Secretary

It's the fourth year for the Natural Resources and Environmental Protection Cabinet's (NREPC) Commonwealth Cleanup Week poster contest, and it's no surprise that many of this year's entries had an American pride theme. A talking Earth draped in the flag or a red, white and blue Kentucky. No matter the image, it's clear the state's school children are ready and willing to keep the Bluegrass clean.

Beginning in January, Kentucky school children were invited to participate in the contest, which promotes environmental education and hands-on learning activities. From crayons to collages, students could use any format to create a message that represents Commonwealth Cleanup Week. Judges selected winners at the school, county and state levels. Prizes ranged from T-shirts to savings bonds.

Out of more than 75 poster entries, three winners were chosen according to their grade level.

Representing grades 1-2 is Blake Parmley. He is a first grader at Walker Elementary in Wayne County. Coltin Franklin of Webster County is the winner of the grades 3-5 age group. Coltin attends Dixon Elementary, where he is a fifth grader. For the grades 6-8 category, the winner is Brittney Hurt of Perry County. She is a student at Viper Elementary.

Blake, Coltin and Brittney all won \$150 U.S. savings bonds. Their schools also received a \$1,500 environmental education grant. To further congratulate the students, First lady Judi Patton and NREPC Secretary James Bickford hosted a press conference. In front of family and teachers, the youngsters were presented their checks and treated to a special reception.

Preparations have already begun for the 2003 Commonwealth Cleanup poster contest. If you're interested in knowing more about the process or how to enter your child's poster into next year's competition, e-mail [Kerry Holt](#), phone (502) 564-5525, or read more online at the [Commonwealth Cleanup Web site](#).

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Gov. Patton announces solid waste curricula

Gov. Paul Patton presented a package of state solid waste educational programs aimed at elementary and middle school students to the Solid Waste Coordinators of Kentucky (SWACK) during a press conference in December at Fern Creek Elementary School in Louisville.

"This program will help teachers across Kentucky educate students about how to deal with solid waste issues in our Commonwealth," Patton said. "Teaching our citizens, especially our youth, about the basic concepts and skills they need to be good stewards of our natural resources is the best way to prevent environmental problems."

The solid waste program is titled "Be a Solid Waste Survivor" and has three different levels or units. Each unit follows state Department of Education guidelines for curriculum, which includes using technology, having multiple writing components, containing authentic assessments and ending with a student participating in a real project.

The primary unit focuses on the role of family, school and community in dealing with solid waste. The grades 4 and 5 unit focuses on our role as consumers in creating solid waste. The middle-grades unit focuses on the role of governments, businesses and citizens in dealing with solid waste. "The units are structured in such a way that both parents and communities can learn about solid waste as the children complete the activities of the program," Patton said.

The Kentucky Environmental Education Council (KEEC) developed the units of the program with assistance from a number of environmental groups and educators. The units will be distributed to the schools through county solid waste coordinators.

For more information, contact [*Jane Eller, KEEC director*](#), or phone (502) 564-5937.

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PRIDE spreads to central Kentucky

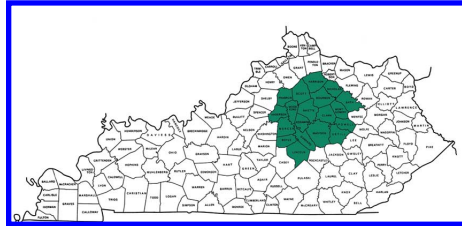


Click on photos below to see them enlarged.



**NREPC Secretary James Bickford speaks during the
Nov. 13 press conference at Fort Boonesborough Beach.**

**Standing with him are (left to right) Steve Reeder, Kentucky River Authority;
Shauna Damin, Kentucky Utilities; U.S. Rep. Ernie Fletcher and Karen Engle, eastern Kentucky PRIDE.**



**Bluegrass PRIDE includes Anderson, Bath, Bourbon,
Boyle, Clark, Estill, Fayette, Franklin, Garrard,
Harrison, Jessamine, Lincoln, Madison, Mercer,
Montgomery, Nicholas, Powell, Scott and Woodford counties.**

By Kerry Holt, Office of the Secretary

Standing along the banks of what used to be a popular swimming hole, U.S. Rep. Ernie Fletcher spoke of days when children spent hours at Fort Boonesborough Beach splashing away on a hot summer's day. However, the fun ended in 1988 when the beach closed due to high bacteria levels. "No Swimming" signs now dot the shore where frolicking families were once the norm.

It's stories like this and others that prompted Fletcher to announce a new cleanup effort directed at central Kentucky. Known as Bluegrass PRIDE (Personal Responsibility In a Desirable Environment), the program will serve 19 counties in the 6th Congressional District. It's also an adaptation of the very successful eastern Kentucky PRIDE program started in 1997 by 5th District U.S. Rep. Hal Rogers and Kentucky Natural Resources and Environmental Protection Cabinet (NREPC) Secretary James Bickford.

"Maintaining a clean water supply and caring for our natural resources have been important priorities of mine since entering Congress," Fletcher stated. "I am excited to establish and build upon the dynamic PRIDE program that Rep. Rogers and Secretary Bickford created to serve southern and eastern Kentucky."

Bickford attended the Nov. 13 press conference and was pleased with the congressman's decision to adopt a PRIDE program in central Kentucky. "The cabinet will do everything we can to assist Ernie's efforts. PRIDE has a partner in us. With federal, state and grassroots support—this will work," the secretary said.

A board of directors will oversee Bluegrass PRIDE, but first an executive committee must be assembled. The seven-member panel will be made of three at-large seats, a representative from the NREPC, a representative from Fletcher's office and an appointee from both the Bluegrass and Gateway area development districts.

While still in its infancy, it's clear that the program is off to a good start. Already Congress has awarded Bluegrass PRIDE two federal grants totaling \$985,000, and private companies are starting to get on board. Kentucky Utilities has already pledged \$10,000, along with Wal-Mart Stores Inc., which donated \$5,000. Individuals who live in the 6th District and wish to clean up dumpsites or replace straight pipes are able to apply to PRIDE for a grant.

There's also an educational element to the program. Bluegrass PRIDE wants to prevent situations like Fort Boonesborough Beach from happening again. Program leaders hope to take PRIDE's message into the classroom and teach children the importance of preserving their environment for generations to come. For more information see the [*PRIDE Web site*](#).

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KBEAP provides a helping hand to a Kentucky business



Greg Copley, KBEAP (left), stands with Barbara Thompson and Vinny Barber of Barber Cabinet Co. in front of a cabinet display showcasing their product. KBEAP photo

By Jackie Gist, Marketing Specialist, Kentucky Business Environmental Assistance Program

More and more businesses across the Commonwealth are discovering the added benefits of a solid record-keeping system for environmental compliance reporting. By keeping accurate records, businesses find that staying in compliance with environmental regulations is a much easier task, and they also have accurate data to make

important decisions regarding their operation's efficiency. That's where the Kentucky Business Environmental Assistance Program (KBEAP) steps in to extend a helping hand.

Vinny Barber, plant manager of Barber Cabinet Co. in Springfield, met KBEAP Director Greg Copley five years ago through a referral from Rose Marie Wilmoth, Kentucky's air quality representative for small business.

Because of changes in the Division for Air Quality's (DAQ) reporting requirements, Barber called KBEAP for assistance in completing his annual reports. Copley and his staff determined that Barber's company was eligible for a deferral from Title V permitting. The company could also use an Excel spreadsheet developed by Minnesota's small business assistance program and modified for Kentucky's record-keeping and reporting requirements.

In 2000, Barber Cabinet reported 37.7 tons of Volatile Organic Compound (VOC) emissions to the DAQ. The company based their reports on the amount of VOC products they purchased each year. However, Copley noticed that between 40-50 barrels of materials were in storage but included in the company's usage records. This inaccurate means of record keeping meant that they were purchasing more material than they actually used each year.

Copley and his staff helped Barber Cabinet install a more accurate record-keeping system. It involves each employee recording the exact amount of products used each week and providing that information to Barbara Thompson, Barber Cabinet's executive assistant. Thompson inputs that information into a Microsoft Excel worksheet, which calculates the exact amount of VOC emissions Barber Cabinets emits each week. Thompson also keeps a rolling total so that she can track the total emissions for the year. Thompson said that the system was time consuming to learn, but once she mastered the process it only takes her about 45 minutes a week to complete. "All I have to do is enter the totals, print out the worksheets and keep them in a notebook," she said. "It has been a learning experience, but it is a much better system."

Barber said that training his workers on the new system did not create any problems. In fact, Barber said the only problem is that more companies don't know about KBEAP and this system. "A lot of companies don't realize Greg and KBEAP come in and set up the whole process. Once it is in place, everything is so much easier. We were just shooting in the dark before, because no one ever told us how to do it," explained Barber.

The system is working so well that Barber only reported 7.243 tons of emissions last year, which is more than a 30-ton reduction from previous years. Their operations are pretty much the same—the only difference is the accuracy of their record keeping. "Accurate record keeping has many benefits to business owners. It allows them to see how much product they are actually using," explained Copley. "Based on that data, they can make decisions regarding purchasing habits and equipment technology, and those decisions can help increase the efficiency of the business," he said.

As far as Vinny Barber is concerned, this won't be the last time he calls on KBEAP. "Calling Greg was the best thing we've ever done. I want to be in compliance. I don't want to be caught doing something I'm not supposed to do, but we don't always know what those things are," he said.

KBEAP provides free and confidential air quality consultations to Kentucky businesses employing less than 100 people. For more information about KBEAP's services, visit the [KBEAP Web site](#) or contact [Rose Marie Wilmoth](#) at (800) 562-2327.

"A lot of companies don't realize Greg and KBEAP come in and set up the whole

process. Once it is in place, everything is so much easier. We were just shooting in the dark before, because no one ever told us how to do it."

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2001 state fair exhibit receives international award



**The 'Spirit of the Land' award was presented to
Stephanie Darst in Salt Lake City, Utah, in February.**

By Rosetta Fackler, Division of Water

The 2001 Kentucky State Fair education exhibit, *2001: A Water Odyssey*, was honored with a 'Spirit of the Land' award from the International Olympic Committee. The award recognizes excellence in environmental education around the world.

The entire 22,000-square-foot exhibit was designed to increase the understanding of the physical properties of streams, their relationship with other waterbodies and the ways each individual fairgoer could impact water quality.

Another important part of the project was to answer the question, "What is nonpoint source pollution?" and to provide an understanding of how individual actions can help clean up Kentucky's rivers and streams.

Fairgoers were introduced to the concept of a watershed through a landscape that included 250 feet of running stream. Features of the landscape were interpreted through signs and student work. In addition to the exhibit itself, teachers were provided with a unit of study on nonpoint source pollution. More than 300,000 Kentuckians visited the exhibit.

Stephanie Darst, state fair education exhibit coordinator, accepted the award in Salt Lake City in February at a special environmental reception. The exhibit was funded in part by a Section 319(h) Nonpoint Source Implementation Grant from the U.S Environmental Protection Agency through the Kentucky Division of Water.

Contact [Rosetta Fackler](#) for more information.

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2002 brings safer drinking water



These sedimentation basins are part of the water treatment process in which solid particles settle out of the water being treated. Photo by Jim Sproles, Division of Water

By Jeff Grubbs, Division of Water

Safe drinking water is both a privilege and a right. Of Kentucky's 4,041,769 people, 3,512,049 are served by the state's 656 public water systems.

Drinking water in the United States is the safest in the world, thanks primarily to the Safe Drinking Water Act (SDWA) passed by Congress in 1974. Oversight of these public drinking water systems and enforcement of the SDWA are responsibilities of the Division of Water's Drinking Water Branch, whose mission is to protect public health by ensuring the provision of potable water. Potable water is defined as finished water, after treatment, that is safe and satisfactory for drinking and cooking. In January, many public water systems began meeting stricter standards for some contaminants.

Three new rules formed by the U.S. Environmental Protection Agency (EPA) will help further protect public health. Large public water systems that treat surface water and serve a population of 10,000 or more began monitoring in accordance with two of the three new rules in January. Systems serving a population of less than 10,000 must monitor and meet compliance by January 2004.

New rules and their impacts

Disinfection of drinking water is a major public health advance. Before drinking water was disinfected, typhoid and cholera epidemics were common. Through disinfection and treatment techniques, harmful microorganisms are controlled. While disinfectants are effective in controlling many disease-causing microorganisms, they react with natural organic and inorganic matter (Total Organic Carbon) in water to form potentially harmful disinfection byproducts (DPBs). Water treatment systems face the problem and challenge of balancing the risks between microbial pathogens through the use of disinfection and harmful DPBs that are formed.

Stage 1 Disinfectants and Disinfection ByProducts Rule (Stage 1 D/DBPR)—The purpose of this rule is to improve public health protection by reducing exposure to three chemical disinfectants—chlorine, chloramine and chlorine dioxide—as well as many disinfection byproducts. The Stage 1 D/DBPR is the first of a staged set of rules that will reduce the allowable levels of disinfection byproducts in drinking water. The rule also requires removal of Total Organic Carbon. Currently, EPA and the states are working on a draft for Stage 2 that is expected to be published in late 2002.

Interim Enhanced Surface Water Treatment Rule (IESWTR)—The purpose of the IESWTR is to improve the control of microbial contaminants, particularly *Cryptosporidium*, a waterborne pathogen. This rule is designed to optimize treatment reliability and enhance removal efficiencies to minimize *Cryptosporidium* levels in treated water. In addition, the rule includes disinfection profiling and benchmarking provisions to assure continued levels of microbial protection, while water systems take the necessary steps to comply with the new Stage 1 D/DBPR standards.

Filter Backwash Recycling Rule (FBRR)—The purpose of the FBRR is to assess and change, where needed, recycling practices dealing with contaminant control, particularly microbial contaminants. The FBRR requires public water systems to review their backwash water recycling practices to ensure that they do not compromise microbial control. Recycled filter backwash water must be returned to a location where all processes of a system's conventional or direct filtration are employed. Implementing this rule will result in reducing the risk of illness from microbial pathogens in drinking water.

Where to find more information

The best source of information about your public water system is from the annual Consumer Confidence Report (CCR) released every July. The CCR, required by EPA since 1999, includes information about the source of your water, the quality of your drinking water and other health-related information. Depending on the size of your system, the water system will mail the report directly to you, publish it in a local newspaper or notify you that the report is available.

The [U.S. EPA's "SafeWater" Web site](http://www.epa.gov/safewater), offers information on drinking water health basics, source water protection and

drinking water standards. It also includes access to drinking water publications. Kentucky drinking water information can be found at the [***Drinking Water Branch Web site***](#). This Web site offers diverse information for citizens and for professionals who are involved with public water systems. Updates on new, proposed regulations are provided on the Drinking Water Branch site.

As rules and trends in drinking water treatment continue to change, staying informed becomes extremely important. The latest news events on drinking water are posted on the [***Drinking Water Branch Web page***](#).

For more information on the Area Wide Optimization Program, contact the Drinking Water Branch's Technical Assistance Section at (502) 564-3410 or view the [***Drinking Water Branch Web site***](#).

For technical information on implementation of new rules for disinfection and turbidity requirements from the 1996 Amendments of the Safe Drinking Water Act, see [***Year 2002 Brings Safer Water***](#).

For the history and activities from the American Water Works Association, see [***Drinking Water Week***](#).

Contact [***Jeff Grubbs***](#) with questions.

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Cabinet staff receive national recognition



The Comprehensive Performance Evaluation (CPE) participants are observing the filter inspection being performed by Drinking Water Branch personnel at the Lake Barkley Water District in western Kentucky. Photo by Jim Sproles.

By Jeff Grubbs, Division of Water

Congratulations are in order. The Drinking Water Branch Technical Assistance staff recently received national recognition for their successful development and implementation of a multi-state approach to water treatment plant optimization. Technical Assistance staff received a certificate of recognition from the U.S. Environmental Protection Agency (EPA) Region IV for actively working on the Area-Wide Optimization Program (AWOP).

AWOP is a multi-state effort to obtain maximum public health protection by perfecting the removal of microbial contaminants and improving the disinfection capabilities of filtration water treatment plants. It is a voluntary program to assist those water systems having the most trouble with their filtration treatment.

Kentucky worked with Region IV EPA in an international exchange program with Korea. Water professionals from Korea visited Kentucky to help perform a Comprehensive Performance Evaluation (CPE) at Lake Barkley Water District in western Kentucky. Americans learned new techniques from the Koreans, who have been doing CPE's for five years. Problems were identified with Barkley Lake's filters, and everyone worked together to identify solutions.

Five states, including Alabama, Georgia, Kentucky, North Carolina and South Carolina, are involved in the AWOP program. Each state tailors its approach to fit its own drinking water framework and priorities.

For more information on the Area Wide Optimization Program, contact the Drinking Water Branch's Technical Assistance Section at (502) 564-3410 or view the [Drinking Water Branch Web site](#).

For AWOP success stories, visit the [Center for Drinking Water Optimization, University of Colorado](#).

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Efforts continue to clean up Kentucky's waters

By Rosetta Fackler, Division of Water

Across the Commonwealth, universities, conservation district offices, cooperative extension offices and watershed groups are joining in the effort to clean up the more than 89,000 miles of surface water that provide Kentuckians with recreational opportunities and drinking water.

Their efforts will be supported by a portion of a \$2.2 million grant from the U.S Environmental Protection Agency (EPA) that comes through section 319(h) of the Clean Water Act. The Kentucky Nonpoint Source Pollution Control Program recently announced the recipients of the 2001 grant:

Tetra Tech - \$177,800 for developing a statewide training program to control sediment at construction sites. Sediment is a major nonpoint source pollutant in Kentucky streams. It suffocates aquatic life, fills in aquatic habitat and destroys the organisms that contribute to a healthy stream. Tetra Tech will work with the Division of Water, the Division of Conservation and other stakeholders to develop sediment and erosion control training products and conduct training workshops for the construction industry throughout the Commonwealth.

Kentucky On-site Wastewater Association (KOWA) - \$315,827 for developing and implementing the Kentucky Wastewater Education Project. Wastewater from straight pipes and nonfunctioning septic systems contaminate drinking water and recreational water. KOWA will develop an effective system of education that will provide needed training and outreach to ensure proper installation and maintenance of on-site wastewater treatment systems.

The Nature Conservancy - \$256,200 to protect the Outstanding Resource Water of Roundstone Creek in Rockcastle

County. This goal will be accomplished through education programs and the implementation and demonstration of best management practices that prevent sediment, nutrient and pesticide runoff.

The University of Louisville - \$194,258 to provide the lead in working with professionals involved in channel restoration. The group, known as the Natural Channel Design Working Group, will develop training modules that apply the principles of natural channel design to Kentucky-specific geologic settings, climatic and ecological conditions. Restored channels provide better flood protection, lessen sediment loading and provide habitat essential for healthy streams.

Western Kentucky University Center for Math, Science and Environmental Education - \$180,639 for the River Institute, which will impact citizens ranging from school children to senior citizens and is based on the premise of educating teams of individuals who will carry out environmental education activities in their communities and create their own local networks. The education program will cover the entire Green and Tradewater river basins.

Section 319(h) Nonpoint Source Implementation Grant applications for 2002 are under review. Recipients will receive funding for approximately \$1.5 million to aid in the efforts to clean up nonpoint sources of pollution in Kentucky waters. Nonpoint source pollution, or runoff, is the responsibility of all citizens. You can do your part by repairing or replacing nonfunctioning septic systems, cleaning up pet waste, fertilizing your lawn or garden only when needed, and retaining trees and vegetation along your stream banks.

For more information, see the [Division of Water Web site](#) or contact NREPCDEPDOWNPS@mail.state.ky.us.

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National Drinking Water Week is May 5-11



By Jeff Grubbs, Division of Water

For 14 years, Drinking Water Week has been celebrated nationally to raise public awareness about safe drinking water and water conservation. This year, Drinking Water Week is May 5-11. It's the annual opportunity for all

water utilities to inform their customers of the safe and reliable product they produce.

Beginning in 1988, the American Water Works Association (AWWA) brought the idea of Drinking Water Week to the attention of the federal government and formed a coalition with the League of Women Voters, the Association of State Drinking Water Administrators and the U.S. Environmental Protection Agency. The week-long observance was declared in a joint congressional resolution and signed by President Ronald Reagan. The following year, AWWA approached several organizations to participate. Through these efforts, the National Drinking Water Alliance was formed by 15 nonprofit educational, professional and public interest organizations. The alliance dedicated itself to public awareness and involvement in public and private drinking water issues and continued its work to organize a major, annual educational campaign built around National Drinking Water Week, which has grown into widespread and committed participation throughout the United States and Canada.

This is an excellent opportunity for the public to learn about safe drinking water and water conservation. We can help our water utilities provide safe drinking water by becoming "water wise" and reducing the amount of water we use daily.

Here are a few water-wise suggestions:

- S Use water only when you need it, and turn off the faucet when you are finished.**
- S Turn off the water while brushing your teeth. Use a glass of water to rinse or turn the faucet on briefly to rinse.**
- S Keep a pitcher of water in the refrigerator for when you want a cold drink of water.**
- S Turn off the lights when you leave a room. Water is often used to generate electricity in the United States.**
- S Use as little water in the shower as possible. Turn off the water while you soap up.**
- S Reduce the amount of water used when flushing the toilet by placing one or two bricks inside the toilet tank.**
- S Water the lawn in the morning or at night, and make sure you aren't watering the street or sidewalk.**
- S Repair leaky faucets in the home.**

Contact your local water utility for more information on becoming water wise in your community or contact the Kentucky Division of Water at (502) 564-3410. The division offers household hints and tips for conserving water and protecting water quality on their Web page at [*on the Division of Water Web site.*](#)

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The straight pipe dilemma

Click on photos below to see them enlarged.



This straight pipe releases untreated wastewater
directly onto the ground's surface
and is barely visible in the surrounding foliage.



The recirculating gravel filter uses gravel
as a growth media for bacteria. It is
alternative system that can be used to

overcome limited site conditions.



This peat system uses bacteria in peat moss to treat wastewater. It is also an alternative system.

Photos by Division of Water

By Dave Harmon, Division of Water

Lack of proper sewage disposal is a major water quality issue in Kentucky. In fact, pathogens impair 33 percent of rivers and streams as assessed in the Division of Water's *1998 Report to Congress on Water Quality*. Improper waste disposal is listed as the fourth-largest source of pollution in the report. Most of these cases are related to unpermitted, direct discharges of untreated sewage (straight pipes) and failing septic systems.

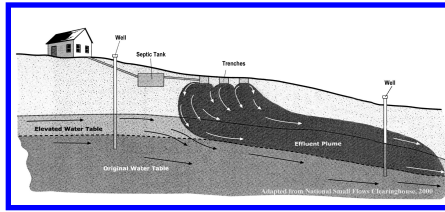
The sewage-related pollution is severe enough in some areas of Kentucky that the Division of Water and the Department for Public Health have issued swimming advisories for several rivers. These advisories were first issued during the early 1990s when monitoring data showed fecal coliform bacteria levels too high to be safe for human contact. The majority of the fecal coliform bacteria in these waterways can be attributed to straight pipes and failed septic systems. Impacts to the state's groundwater resources are more difficult to determine, but the Cabinet for Health Services reports that nearly half of the private drinking water wells they have sampled tested positive for fecal coliform bacteria.

The U.S. Environmental Protection Agency (EPA) estimates that more than 40 percent of Kentucky households are not connected to a municipal treatment system and must rely on septic systems or other on-site means of sewage disposal. In eastern and rural portions of the state, this percentage may be much higher.

Eliminating straight pipes

On Aug. 14, 2001, Natural Resources and Environmental Protection Cabinet Secretary James Bickford and U.S. Rep. Hal Rogers, co-founders of the PRIDE (Personal Responsibility In a Desirable Environment) program, announced the "straight pipe initiative." This is a program aimed at eliminating straight pipes in the 40 eastern Kentucky PRIDE counties encompassing the previously drawn 5th Congressional District. It is estimated that approximately 36,000 homes in the 40-county PRIDE area rely on failed septic systems or straight pipes for wastewater disposal. Recently, U.S. Rep. Ernie Fletcher and Secretary Bickford announced Bluegrass PRIDE, a similar program to assist in eliminating straight pipes and open dumps in the 6th Congressional District.

At present, Division of Water inspectors are trying to locate all straight pipes and failed septic systems. Once identified, the owner is issued a Notice of Violation, instructed to cease the discharge, directed to the local health department for a septic (on-site) system or the municipality for sewer hookup, and assisted with seeking funding from PRIDE.



In this diagram of a nonworking conventional septic system, the effluent from the lateral trenches is finding its way into the elevated water table and impacting the water well down the slope. The system was installed too close to the water table and upgradient to a water well. In addition, it probably failed because of improper trench installation, overloading of the system or lack of maintenance.

What is a homeowner to do?

Unfortunately, many locations in Kentucky have limited site conditions that make a particular area unsuitable or inappropriate for conventional septic systems. Most often, the limitations are poor/shallow soils, steep slope, high water and small lot size. A conventional septic system requires almost perfect site conditions if adequate soil-based treatment is to occur. However, some limitations can be overcome with the use of "alternative" or advanced on-site wastewater treatment systems.

Generally, alternative systems provide advanced treatment of wastewater prior to its entering an underground disposal field. Alternative systems generally fall into three categories: mechanical systems (aerators), media filters (sand filters, peat filters, fabric filters) and natural systems (wetlands). The basic theory behind an alternative system is to treat the wastewater to a sufficient degree that it will overcome limitations preventing the use of a conventional system. Alternative systems can be more expensive than the conventional septic system and have greater operation and maintenance requirements.

Alternative systems may also be used in environmentally sensitive areas where the environment may need a higher degree of protection, such as karst terrains or wellhead protection areas.

Funding Solutions

As part of the PRIDE initiative, approximately \$24 million in grant funding is being provided to help thousands of low-income households tap onto sewer lines or install on-site systems, thereby eliminating straight pipes. PRIDE originally started a septic system loan program in 1999 but has shifted to a 100-percent grant-funding program. The funding is being administered by the local area development districts and the resource conservation and development councils. The Division of Water is also working on potential funding sources by revising the state's Wastewater Revolving Loan Fund to allow "decentralized" wastewater systems to be eligible for funding.

As a Last Resort

It is critically important to realize that some sites are not suitable for any on-site sewage system, alternative or otherwise. In some cases conditions are so limiting that no on-site system with subsurface discharge can be installed. Where certain water quality criteria can be achieved, a residential wastewater treatment plant with a surface water discharge may be an appropriate solution for household wastewater treatment. However, residential treatment plants are often difficult to keep in compliance with water quality standards due to the changing wastewater loads.

In some instances, a site may be initially suitable for an on-site sewage system but is disrupted, compacted or otherwise damaged to the point that an on-site system will simply not function. If this has occurred and a residential treatment plant is not appropriate, then no on-site solution is available.

There are two last resorts when on-site wastewater systems cannot be installed. The first and least desirable solution is to vacate the property. This solution is viable when the cost of an on-site system exceeds the value of the property. The other solution is to install a holding tank and have it pumped routinely. Unfortunately, this pump-out process can become quite expensive over time, and holding tanks are only temporary solutions until an on-site system can be installed or a sewer line connection can be made.

On a brighter note, the Division of Water and Department for Public Health are working on expanding the available options for on-site wastewater treatment and disposal, primarily through the use of advanced alternative on-site systems. In addition, strategies are being developed to assure that the appropriate system is installed, operated and maintained over the long term. Hopefully, these efforts will help in providing cost-effective, environmentally sound on-site wastewater treatment for Kentucky.

Success Stories

In 1997 the Estill County Conservation District and the Cumberland Valley Resource Conservation and Development (RC&D) Council realized that one of the biggest water quality concerns in Estill County was straight pipes and failing septic systems. In a proactive step to eradicate straight pipes and failed septic systems in two watersheds, the conservation district applied for a 319(h) grant from the U.S. EPA and the Kentucky Division of Water. In addition, the conservation district received two PRIDE grants to assist with the project. To date, approximately 100 homeowners have received both conventional and alternative septic systems from this project.

The Estill County Conservation District and Cumberland Valley RC&D Council received a 2001 Governor's Environmental Excellence Award for Community Environmental Leadership for their efforts in abating straight pipes and failed septic systems.

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Clean county initiative proves a success



NREPC Sec. James Bickford and Menifee County Judge-Executive Hershel Sexton (left) join Gov. Paul Patton and Menifee County Solid Waste Coordinator Carolyn Ingram (right) in unveiling the Menifee County Certified Clean County sign. Photo provided by Creative Services



By Matt Hackathorn, Division of Waste Management

A unique environmental program focused on eliminating open dumps in Kentucky has blossomed across the state. It's called the Kentucky Certified Clean Counties Program (KCCCP) and was created by Gov. Paul Patton after the 2001 General Assembly failed to enact solid waste legislation. His initiative has enjoyed preliminary success during its first few months.

The purpose of KCCCP is to assist counties by providing grant money to those demonstrating a commitment to eliminate open dumps. Of the 29 Kentucky counties that offer mandatory garbage collection, 13 have elected to participate in the program.

The program has generated some compelling figures regarding the number of dumps that have been reported by county officials versus the number that are now being identified during a joint county/state inspection. The new data led the Kentucky Division of Waste Management to re-evaluate its estimate on the total number of dumps statewide. In 2001 the division estimated that about 3,000 illegal dumps littered the Commonwealth (based on assessments provided by each county). In early 2002 that estimate climbed to more than 10,500 (based on the first 11 counties to participate in KCCCP), and that number is likely conservative.

"When the process to identify all illegal dumps started, Grant County officials thought they had less than ten," said Cathy Guess, who heads up KCCCP as a member of the Department for Environmental Protection's Resource Conservation and Local Assistance Branch. "They actually cleaned 74 dumps at a cost that exceeded \$194,000."

Washington and Menifee were the first two counties to receive clean county status from Gov. Patton, and at press time Grant County was awaiting certification. "With the help of these counties, the state has cleaned up 129 illegal dumps," said Guess. "Once the other eight counties complete their cleanups, the total number of dumps eliminated will be more than 1,200." The eight counties that are in the process of cleaning illegal dumps include Bell, Hardin, Kenton, Knott, Letcher, Magoffin, Meade and Pike. In addition, Harlan and Warren hope to qualify for KCCCP funding once county officials complete the grant application process and identify all open dumps within their boundaries.

When a county identifies and cleans up all of its illegal dumps, the state provides the county with signs to be posted at selected locations deeming it a Kentucky Certified Clean County. Guess said being certified clean helps counties improve economic development opportunities, tourism and groundwater quality. "The state reimburses each county 75 percent of the estimated or actual cleanup cost for each dump, whichever is less," she explained. "Counties that otherwise couldn't afford to improve their image to tourists and industry are only responsible for 25 percent in either in-kind services or cash for the cleanup. That's a pretty good bargain."

Patton's executive order allotted only \$4 million for the program, and the 11 counties currently enrolled were allocated \$3.3 million of that funding. Guess said she's unsure where the program will get future funds in the event more counties want to participate. Therefore, the long-term future of KCCCP is uncertain.

Regardless of whether the KCCCP initiative is financially able to continue, Guess claims the bottom line in cleaning up illegal dumps lies with participation from everybody, especially enforcement officials. "Citizens need to be educated about the negative affects on their environment, and community enforcement officials, like police officers, city and county attorneys, and district judges must be willing to enforce the laws we have."

Counties interested in participating in the KCCCP should contact Cathy Guess or Leslie King at (502) 564-6716.

Counties interested in receiving state assistance and becoming a Certified Clean County must first:

- Adopt a mandatory curbside collection program;**
- Commit to cleaning up all identified illegal dumps (and keep them cleaned up);**
- Employ a solid waste coordinator with enforcement powers; and**
- Establish a local Clean County Committee consisting of citizens from business, education, agriculture and other organizations to increase clean county awareness.**

For more information, see the [*Division of Waste Management Web site*](#) or contact *Cathy Guess*.

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Celebration marks deed transfer



Fran Mainella, National Park Service.

By Mary Jean Eddins, Department for Natural Resources

This article is a follow up to the story we brought you in the winter issue of *Land, Air & Water* detailing the purchase of Abraham Lincoln's boyhood home in Larue County. Through the efforts of many, the property is now protected by the National Park Service.

Feb. 12, 2002, was the 193rd anniversary of Abraham Lincoln's birthday, and local and national officials gathered in Larue County to celebrate the transfer of his boyhood home to the National Park Service.

In attendance were former U.S. Sen. Wendell Ford, U.S. Congressman Ron Lewis, former Gov. Louie B. Nunn, National Park Service Director Fran Mainella and numerous other dignitaries. Mainella's keynote address stressed the importance of volunteerism and cooperation. She said she was extremely impressed with the way local citizens, nonprofit organizations, and county, local, state and federal officials were able to work together to make the acquisition a success. "I will tell this story nationally," she said.

The county, led by Judge-Executive Tommy Turner, was responsible for raising the \$1 million necessary to acquire the 228-acre property. Turner was able to secure \$500,000 from Gov. Paul Patton and the Kentucky General Assembly in the state's fiscal year 2000 budget. The Kentucky Heritage Land Conservation Fund Board approved an additional \$487,000 with the remainder coming from a variety of sources, including \$10,000 from the National Park Trust.

Dr. William H. Martin, chair of the Kentucky Heritage Land Conservation Fund Board, noted in his remarks that Kentucky loses 160 acres to development every day. "It is increasingly critical that all of us continue to work together to provide sustained funding to protect these valuable resources and to preserve our state and national heritage."

The National Park Service will now manage the Abraham Lincoln Boyhood Home in conjunction with the Abraham Lincoln Birthplace, located several miles down the road.



The Kentucky Heritage Land Conservation Fund Board receives funding from several sources—environmental fines, the state portion of the unmined minerals tax and \$10 from each Kentucky nature license plate that is sold in the state. Grants are awarded to state agencies, county and local governments, and state colleges and universities for the acquisition and management of selected natural areas and wildlife habitat across the Commonwealth.

For information about the Kentucky Heritage Land Conservation Fund or Kentucky nature license plates, please

contact [*Mary Jean Eddins*](#) at (502) 564-2184, or see the [*HLCF Web site*](#).

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Bowling Green flips the switch to green power



Green Power Switch®



The solar power plant provides shade and rain shelter for spectators and players at the soccer complex. Photo by Greg Filburn

By Greg Filburn, Division of Energy

Today, many Bowling Green Municipal Utility (BGMU) customers are choosing to get their electricity from green power, which is electricity generated from renewable energy such as solar, wind or landfill gas. Through BGMU's Green Power Switch® program, customers have the option of purchasing blocks of green power each month. The extra \$4 these BGMU customers pay ensures that approximately 12 percent of their electricity is generated by green power. A typical home uses 1,250 kilowatt-hours of electricity per month; the green power is sold in blocks of 150 kilowatt-hours. Customers can purchase as many blocks as they want.

The environmental benefits of green power are enormous. Electricity generated from solar and wind energy generates no air pollution, greenhouse gases or water pollution. Landfill gas, or methane, created from the decomposition of trash in landfills, is typically collected and burned for environmental and safety reasons. Taking advantage of this process to generate electricity creates no new pollution and helps keep methane, a greenhouse gas, out of the atmosphere.

Despite its environmental benefits, green power is more expensive than power generated from conventional sources. Conventional sources have benefited from more than a century of development and implementation, while green power has only been in development in recent decades. Nationwide nonconventional, renewable energy accounts for 0.1 percent of our electricity generation, while conventional sources account for 99.9 percent.

By paying an extra \$4 each month, BGMU customers cover the additional cost of green power. Also, purchasing green power today creates a market for green power producers. As more solar, wind and landfill gas generators are manufactured worldwide, the costs can be steadily lowered until green power is economically competitive with conventional sources.

The Green Power Switch® program was started by the Tennessee Valley Authority (TVA) on Earth Day 2000. TVA offers the program through many of its distributors in its seven-state distribution area. BGMU is currently the only TVA distributor in Kentucky that offers the program.

As part of the program TVA must generate and place onto its distribution grid a block of 150 kilowatt-hours of green power for every block of green power sold by its distributors. TVA generates green power using 11 solar power plants, one wind power plant, one landfill gas power plant and one wastewater treatment methane plant. All of these plants are located in Tennessee with the exception of one solar plant in Alabama, one in Virginia and one in Kentucky. The solar plant located in Kentucky is in Bowling Green at the Lover's Lane Soccer Complex.

The Lover's Lane solar power plant, dedicated in June 2001, is a 36-kilowatt system consisting of 960 solar photovoltaic (PV) panels, which convert sunlight to electricity. Most commonly known as "solar cells," PV systems are already an important part of our lives. The simplest systems power many of the small calculators and wrist watches we use every day. More complicated systems provide electricity for pumping water and powering communications equipment. The Lover's Lane system can generate about 53,900 kilowatt-hours of electricity each year — enough to meet the power demand of four average homes. The power generated is placed on the TVA distribution grid.

The power plant also serves as shade and a rain cover for picnic tables used by thousands of spectators and players each year during competitions at the Lover's Lane Soccer Complex. A large sign located close to the system educates people about solar energy and the Green Power Switch® program.

The solar power plant in Bowling Green has enabled BGMU Green Power Switch® customers to see where and how their green power is being generated. To date, BGMU has been successful selling that power. According to Mark Shults of BGMU, the utility has sold a total of 64 blocks of green power to residential customers and 134 blocks to commercial customers. Lowe's Home Improvement has purchased 104 blocks; Kinko's Copies 25 blocks; and Quality Personnel Inc. five blocks.

Companies and residents that purchase blocks are able to display the Green Power Switch® logo to indicate their participation in the program and their support of the environment. Gary Harris of TVA says the logo has been such a great public relations tool for commercial customers that they've purchased a much higher number of blocks than originally expected. As of January 2002, commercial customers have purchased 5,621 blocks and residential customers 4,697 blocks across the TVA distribution area.

In the near future more Kentuckians will be able to participate in TVA's Green Power Switch® program. Starting in 2004, TVA plans to make the program available to all of its distributors including the other 13 municipalities and five rural electric cooperatives in southern Kentucky supplied by TVA.

For more information about the Green Power Switch® program contact [Greg Filburn](#) at (800) 282-0868, visit the [Division of Energy Web site](#) or the [Green Power Switch Web site](#).

Toyota purchases green power

Owen Electric Cooperative and Toyota Motor Manufacturing North America Inc., have signed an agreement for the automaker to purchase renewable power for Toyota's quality lab located at the company's manufacturing headquarters in northern Kentucky.

The agreement is the first of its kind in Kentucky. The program, called EnviroWattsm, will allow members to obtain a portion of their monthly electric supply from renewable sources such as wind, sun, water and biomass (including wood

waste and landfill gases). The renewable power in the EnviroWatts program will be generated in northern Indiana and will come from landfill gases.

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Division of Forestry partners with KYTC

By Jim Funk, Division of Forestry

Since the early 1960s the Kentucky Division of Forestry has been producing and selling millions of tree seedlings. From one end of the state to the other, the influence of tree planting using the division's seedlings is obvious. The seedlings are on strip mines, bottomlands, old fields and lands that were once severely eroded. You may not recognize them as Division of Forestry seedlings because many of them are now mature trees. They may have been in your living room last Christmas or they may be part of that nice woods that you pass each morning. A grown-up seedling might also be on a log truck on its way to the mill to become a piece of fine furniture.

We are blessed in Kentucky to have some of the finest and most diverse hardwood forests in the world. The Division of Forestry's nurseries do their part by providing quality seedlings for Kentuckians to plant and grow future forests. Partnering with landowners, state and local agencies, businesses and the forest industry to plant trees in an efficient and effective way is beneficial to all citizens of the Commonwealth, and one such partnership is paying off.

In 2001, the Kentucky Transportation Cabinet (KYTC) contacted the Division of Forestry about using seedlings for wetland and streambank restorations. The KYTC spent an average of \$3,500 per acre using previous methods. In addition, survival and long-term success rates were minimal due to harsh site conditions and contract provisions. The KYTC recently purchased a variety of hardwood seedlings from the Division of Forestry to plant on a tract of land in Calloway County. The success of this project is leading to additional planting of acres using the division's seedlings. The KYTC reports that more than 700 acres are now in the planning stage.

The new partnership has paid off in several ways. A cost savings of nearly \$3,000 per acre was immediately realized, and the number of seedlings planted increased from 400 to 600 per acre. Having a local seedling source, predictable availability and high-quality growing stock has helped make the plantings more successful.

The Division of Forestry's two nurseries currently sell approximately 6 million seedlings annually and are expecting to sell 7 million seedlings in 2003. The nurseries grow a wide variety of quality hardwood and conifer seedlings for sale and planting in the Commonwealth. For more information, contact the division at (800) 866-0555 or visit the [*division's Web pages*](#).

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Kentucky's forests protected for 90 years

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**Foresters receive training on timber marking
at Pine Mountain State Park in 1972.**

Photos by Division of Forestry

By Gwen Holt and Cary Perkins, Division of Forestry Photos by Division of Forestry

Four score and ten years ago (1912), the Kentucky General Assembly brought forth upon this Commonwealth a new agency conceived in the conviction that Kentucky's forests were being over exploited and degraded. Consequently, the Board of Forestry was born and, with the Reorganization Act of 1936, became the current Kentucky Division of Forestry.

Ninety years have passed since John Earle Barton became Kentucky's first state forester in 1912, answering to the Board of Forestry that included three governor-appointed members, as well as the governor, Commissioner of

Agriculture and the Kentucky Experiment Station director as ex-officio members. Upon the creation of the Board of Forestry, a state forester was appointed, a corps of county forest wardens with powers to arrest for forest fire violations was established, and authority was given to establish nurseries to raise tree seedlings and create state forest reserves.

Kentucky is at the center of a nine-state region considered to be the best hardwood-growing area in the Northern Hemisphere. As early as 1845, white oak was being exported to France for the manufacturing of wine casks.

In 1907, a forest survey found that the effects of fire, over cutting, and high grading of choice trees and species had resulted in a severe reduction in what seemed like a nearly endless, high-quality, old-growth forest resource. It predicted that Kentucky's timber supply would be exhausted in 15 years at its current rate of use. The survey also prescribed certain improved practices and protection measures that ensured an adequate supply of wood could be restored and maintained. The most important result of the survey was the establishment of the Board of Forestry.

The new board was hampered in effectiveness by a shortage of staff and inadequate appropriations, but under its guidance the first Fire Protection Association was organized in Harlan County in 1913. With Harlan County landowners paying a yearly one-cent-per-acre forest protection tax, the protected area soon encompassed 200,000 acres by 1915. This type of protection then extended to other neighboring counties. Since 1959, counties receiving state forest fire protection are assessed .02 cents per acre of privately owned forestland.



One of the few remaining fire towers, the Berkman Fire Tower is located in the Kentenia State Forest in Harlan County.

In 1914, two tree nurseries were established—the first and largest located at the fairgrounds in Louisville and a smaller one in Frankfort, which was later abandoned. The Louisville nursery, however, was built up and eventually produced as many as 25 million tree seedlings. Today, the division operates two tree nurseries, one adjacent to Kentucky Dam Village at Gilbertsville and the other at Grassy Creek in Morgan County, where they annually raise 6.5 million seedlings.



**Bald Cypress and Pecan seedlings nestle in rows
at the John P. Rhody Nursery in Gilbertsville.**

In 1919, the Board of Forestry acquired its first state-owned forest. The Kentenia-Cantron Corp. deeded seven tracts of land totaling 3,624 acres on the south side of Pine Mountain in Harlan County to the Commonwealth. Two of these tracts were later deeded in the mid-1990s to the Kentucky State Nature Preserves Commission as part of the buffer area for the Blanton Forest State Nature Preserve. The state forest program has grown to 35,833 acres located in six state forests. Through assistance from the Kentucky Heritage Land Conservation Fund, additional land is being added annually.

In 1948, the Kentucky General Assembly enacted laws that provided guidance in forest management to private individuals, corporations, local governments and institutions. Although previously implied, these guidelines now became formalized laws.

In 1952, Kentucky saw its worst fire season in recorded history with 728,000 acres burned. To frame the severity of 1952, the total acreage burned in 2001 reached 175,000. In recent history, last year was the worst fire season since 1987 when 285,000 acres burned.

**Forester marks logs in Carroll
County in 1979.**

Division of Forestry's Cary Perkins stands beside logs from a harvest he marked in Carroll County in 1979.

During the 60s, 70s and 80s the division continued to grow. March 1965 marked the first fatalities caused by forest fires in the history of the division. Three division firefighters lost their lives fighting a fire in Harlan County. In 1991, two Neon Fire Department volunteer firefighters lost their lives from injuries sustained while fighting a blaze in Letcher County. The most recent forest-fire-related fatalities took place in 1999 in Rowan County where two Route 377 Volunteer Fire Department firefighters perished. The division has always, and continues today, to rely heavily on the assistance of volunteer firefighters. It provides volunteer fire departments with ongoing wildland firefighting training and equipment.

The 70s brought changes to the way the division located forest fires. The fire towers that were traditionally used were retired from service, and the division began using aerial detection to spot fires. This method has proven very effective, and the Division of Forestry is now incorporating global positioning technology to pinpoint fire locations.

Forest health became an issue when a severe outbreak of Southern Pine Beetles occurred from 1975 to 1978. Today, the forest health program is dealing with the worst beetle infestation in recorded history. It is estimated that this pest has damaged 199,000 acres in the last three years.

Significant urban sprawl of the 80s brought the need to practice urban forestry in Kentucky's cities. The Urban and Community Forestry Program was established to address the importance of urban trees for their social, environmental and economic benefits to communities across the state. Nearly 55 percent of Kentuckians live in urbanized areas, and this shift in the state's population is expected to increase.

In 1990, the division's forest management program that provides technical assistance to landowners was upgraded to encompass the federal Forest Stewardship Program. Forest stewardship plans have been prepared for more than 12,000 Kentucky landowners covering more than 1,300,000 acres. This represents nearly 11 percent of all the forestland in the Commonwealth. To date, Kentucky has produced a third of all the forest stewardship plans in the South, and in 1993 the National Woodland Owners Association honored the division's Forest Stewardship Program as the finest in the United States.

Today's forest ranger technicians were once called forest wardens or forest guards. In 1995, a division reorganization changed the position title and expanded their duties to include not only fire prevention and suppression activities, but landowner assistance through the Forest Stewardship and Urban Forestry Programs. This reorganization provided for career advancement that had not existed in the past.

Arson, the leading cause of forest fires in Kentucky, has dramatically increased. The Wildland Arson and Fire Prevention Task Force was established in 2000 to study and make recommendations regarding this ongoing problem.

In the last two years the Division of Forestry took on a whole new role. Historically, it has provided technical assistance to private forest landowners, conducted fire prevention activities, enforced the forest fire protection laws and provided fire suppression on private land. In addition, it now regulates commercial timber-harvesting operations. With the creation of the Kentucky Forest Conservation Act in 1998, the division is now charged with ensuring a master logger is on site and in charge of all commercial timber harvesting operations. They must also ensure that appropriate best management practices are being used to reduce and prevent nonpoint source water pollution.



Currently, the division has 238 employees. The current director, Leah MacSwords, is only the 13th director the agency has had throughout its 90 years. MacSwords is also the first woman in the South to hold the title of "state forester" and only the third in the nation.

For more information see the [*Division of Forestry Web site.*](#)

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Governor's Summit on Wildland Fires and Communities-at-Risk



A fire burns very close to a homeowner's shed. Division of Forestry photo

By Gwen Holt, Division of Forestry

In the last several years wildland fires have threatened many communities in Kentucky. The Kentucky Division of

Forestry, along with Gov. Paul Patton, will be sponsoring a public summit on Wildland Fires and Communities-at-Risk. Citizens, community leaders, local law enforcement agencies and other interested parties will be invited to attend this summit, which will be held at Jenny Wiley State Park, Oct. 9-10, 2002.

This summit will provide a forum for citizens and government leaders in communities impacted by wildland fires to learn more about the wildland fire problem in their area. The goal is to encourage stronger community and law enforcement action to prevent wildland fires and to protect public and private property. Participants will gain a full understanding of the magnitude and impact of wildland fires in Kentucky from the economic and public health and safety perspectives.

The presentation topics have not been finalized but are expected to include: fire suppression costs; public and firefighter safety; loss of personal property; impacts to forest health; loss of economic value of forests; impacts to public health; protecting personal property; establishing FIREWISE Councils; wildland arson statistics; applicable statutes; and the Kentucky Wildland Arson Prevention Task Force.

Registration information will be included in the summer issue of this magazine and will soon be available from the Kentucky Division of Forestry. For more information about the summit, contact [Gwen Holt](#) at the Division of Forestry at (502) 564-4496.

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Kentucky becomes nationwide model...



Representatives from the U.S. Environmental Protection Agency, Kentucky Division of Conservation, Division of Water, Franklin Co. Conservation District and Natural Resource Conservation Service meet with a Franklin County landowner to discuss and evaluate best management practices. Division of Conservation photo

By Curtis Kirk, Division of Conservation

The 1994 Kentucky General Assembly issued a big challenge to Kentucky's agricultural operations. The challenge: develop individual agriculture water quality plans that protect surface and groundwater resources from

agriculture and silviculture activities with the potential to pollute the waters of the Commonwealth.

To further complicate the challenge, a state water quality plan had to be developed by the Kentucky Agriculture Water Quality Authority and approved by the Division of Water. The plan was completed and approved in 1996. Basically a compilation of best management practices, it would set the standard and became the foundation that all agriculture operations would use to develop site-specific plans for their own operations. This set into motion a five-year countdown for compliance. It meant that all landowners that fit the definition of an agriculture operation now had the responsibility of preparing water quality plans. These plans had to meet the needs of their particular operation and had to be fully implemented by Oct. 23, 2001.

The Oct. 23 deadline has come and gone and brought with it many successes. Much of the success can be attributed to the more than 54,000 landowners in Kentucky that have voluntarily filed self certifications with Kentucky's conservation districts stating that they have individual water quality plans for their operations. These landowners are responsible citizens, good environmentalists and have strong ties to the soil and water on their own farming operations. They rely on these resources to sustain their families, livestock and cropping enterprises.

Equally important to the successes are the major roles assumed by the Kentucky Soil and Water Conservation Commission, Kentucky's Division of Conservation and Kentucky's 121 local conservation districts. Together they provided financial and technical assistance to landowners to ensure their ability to comply with this new law. They also worked with the University of Kentucky Cooperative Extension Service, the Kentucky Division of Water and many others to make landowners aware of their responsibilities under the law and provided education and technical assistance in the preparation and implementation of their plans.

The Agriculture Water Quality Act (AWQA) is unique in its approach of implementing agriculture policy and farming practices to protect water quality. Individuals in several states and countries studying and monitoring Kentucky's progress and successes are looking at the AWQA as a future model in changing the way they address agriculture and silviculture water quality concerns. Inquiries and requests for Kentucky's Agriculture Water Quality Plan and other information pertaining to Kentucky's AWQA have been received from many states, including Iowa, New Jersey, Texas, Maine, Michigan, Maryland, California and New York. Requests for information have come from as far away as Canada, Taiwan, Germany and Australia.

What does this mean to farmers and landowners in Kentucky? It puts them in a leadership role and creates opportunities that will add profitability to their operations. They will continue to be required to follow agriculture water quality plans on their operations, and these plans will require continuous review and modifications as operations and circumstances change. Best management practices will be maintained and modified to ensure effectiveness. This brings added protection to the landowner and assures compliance with the law and helps protect a valuable resource vital to their existence.

What does this mean to Kentucky? Miles of streams and rivers, acres of lakes, ponds and groundwater supplies are being protected by best management practices designed to help reduce animal waste nutrients, prevent the loss of topsoil, and minimize sediment and other sources of pollutants in Kentucky's waters.

Millions of dollars are being spent through the Kentucky Soil Erosion and Water Quality Cost Share Program to help agriculture and silviculture producers implement their individual water quality plans. The AWQA will be keeping Kentucky's agriculture in the forefront and working cooperatively with other ongoing efforts to address environmental issues on our land and farmsteads.

For more information, see the [Division of Conservation Web site](http://www.kyenvironment.org/nrepc/landairwater/spring02/ag_water.htm).

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Coal company completes bond replacement



Front-end loaders scrape coal from the pit and load coal trucks for removal at this active, multi-seam mining permit in eastern Kentucky. Photo by J. Hamon, DSMRE

By Mark York, Office of the Secretary

Addington Enterprises Inc. (AEI) has completed the replacement of bonds issued by the Frontier Insurance Company of New York for surface mining reclamation and workers compensation liabilities in Kentucky. AEI replaced \$187 million in bonds for surface mining reclamation and also finalized a \$16 million surety package on workers compensation.

AEI had reported to U.S. Department of the Interior officials that the company had trouble finding replacement bonds in light of the Sept. 11, 2001, tragedy as well as the bankruptcy of Enron last year. In a Dec. 31, 2001, letter federal regulators had advised state officials that they should consider extending the deadline until March 1, 2002, for AEI to completely replace its bonds.

AEI and other coal mining companies in Kentucky were ordered to replace surface mining reclamation bonds issued by Frontier after the Kentucky Department of Insurance, on Aug. 27, 2001, suspended Frontier's ability to conduct business in the state. The state action followed seizure of the company by the New York Department of Insurance.

Under state surface mining laws, companies holding Frontier bonds had 90 days from the suspension to find replacement bond coverage. At the same time, the Department for Workers Claims scheduled a show-cause hearing to determine if AEI could continue to operate in the Commonwealth and if adequate protection for its workers was in place. AEI continued to utilize Frontier surety bonds to ensure payment of its workers compensation liabilities.

Under an initial agreement AEI provided a \$1 million surety bond to the Natural Resources and Environmental Protection Cabinet with a commitment to replace all surface mining bonds for active permits by March 1, 2002.

The company agreed to drop its legal action against the cabinet pending in Boyd Circuit Court. The state's action affected 33 coal companies operating in Kentucky and all but three were able to find replacement bonds by Dec. 5, 2001. The state Department for Surface Mining Reclamation and Enforcement (DSMRE) issued more than 250 citations to the companies that had failed to completely replace Frontier bonds.

The DSMRE had required AEI to replace five percent of their total bonds (\$6.8 million) in specific permit categories by Dec. 5, 2001. While the company met this state-imposed deadline, AEI also obtained a restraining order on Dec. 27, 2001, from Boyd Circuit Court preventing the cabinet from stopping mining operations, suspending permits or issuing notices of noncompliance or violations against the company.

For more information, see the Web site of the [*DSMRE Division of Field Services*](#).

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Preserving Kentucky's cultural resources

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The author examines a prehistoric rock shelter
in Perry County.



Consulting archaeologists (left to right) David Boling,
Thor Olmanson and Jason Wyatt excavate a prehistoric site
in Hopkins County. Photos by Tom Sussenbach, DSMRE

Kentucky is rich in culture and meant to be preserved for future generations.

By Tom Sussenbach, Department for Surface Mining Reclamation and Enforcement

For more than 10,000 years, humans have made this area we now call Kentucky their home. From the Appalachian Mountains in the east to the Mississippi River in the west, the remains left by previous occupants constitute the cultural heritage of our citizens. Archaeological sites, historic structures and other landscape features provide information on past cultural lifeways. Understanding and protecting this heritage is one of the many tasks undertaken by the Department for Surface Mining Reclamation and Enforcement (DSMRE).

Many regions in Kentucky are mined today for coal—a natural resource plentiful in this state. Before a coal mining operation receives a permit, archaeologists at the DSMRE review preliminary mining applications to determine if mining could impact cultural resources. If the potential for these resources exists, the coal company is required to conduct a cultural resource survey of the permit area. Consultants hired by the companies submit reports that provide results of the surveys and recommendations on the potential importance of any resources identified in the permit area.

Prehistoric archaeological sites may include rock shelters, villages and camps, chert quarries, petroglyphs (rock carvings) and burial mounds. Common historic resources consist of standing structures, old farmsteads, abandoned mining camps, stills and cemeteries.

The DSMRE and the State Historic Preservation Office review the survey reports, and together these agencies determine whether any of the identified resources are potentially significant. Significant resources are those that can provide important information about the past. Most sites and standing structures are not considered significant; however, when significant resources are identified, the permit applicant must preserve the site or structure in place by establishing a buffer zone from the mining operation or conduct further investigations to recover information prior to their disturbance.

Investigations in the eastern and western coalfields have yielded new information on many aspects of prehistoric and historic life in Kentucky.

Most students think of the earliest Kentuckians as hunters and gatherers, but a recent investigation in Perry County has unearthed new evidence of prehistoric farming practices. Seeds from goosefoot, maygrass, sunflower, knotweed and marshelder were discovered at a village site. These native plants were transformed into cultivated varieties that were planted, tended and harvested for their seeds.

Evidence was also uncovered of corn being raised. Dating back to A.D. 200 (1,800 years ago) makes this one of the earliest corn crops grown in the eastern part of the state.

Corn became an important part of early Kentuckians' diet, and many of the other plants ceased to be used. Investigations at the village may give us a more complete understanding of when and why these changes occurred.

The study of this particular site is ongoing and according to the opinion of this author, "has the potential to rewrite the prehistoric history of the Kentucky River watershed."

For more information, contact [John Carter](#), DSMRE, at (502) 564-2320.

In kind and respectful memory of Tom Sussenbach 1957-2002

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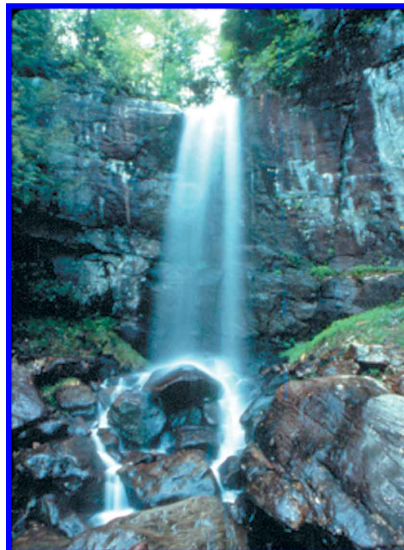
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Pine Mountain: An impressive work of Mother Nature

Click on photo to see enlargement.





Photos by KSNPC

By Marc Evans, Kentucky State Nature Preserves Commission

In all my travels in Kentucky, and of all the many beautiful places I've seen, one place stands out among them all. In extreme southeastern Kentucky lies one of our state's most unique biological, ecological, geological as well as beautiful natural resources. Forming an almost solid wall over 120 miles long and rising from 1,000 to 1,500 feet above the valley floors, Pine Mountain is an impressive work of Mother Nature. The mountain, which (technically speaking) is a long, even-topped, erosion fault scarp, forms the northwest border of the Cumberland Mountains ecoregion, a rugged, heavily forested region that also contains Kentucky's tallest mountains and most scenic vistas. The mountain ridge runs from near Jellico, Tenn., on the southwest to Elkhorn City, Ky., on the northeast and runs through portions of Whitley, Bell, Harlan, Letcher and Pike counties. Elevation above sea level range from less than 2,200 feet on the southern end of the mountain to more than 3,200 feet in the vicinity of Bad Branch in Letcher County.

More than 200 million years ago, during the late Paleozoic period, the bedrock in this corner of Kentucky, where Kentucky, Tennessee and Virginia meet, was uplifted and turned up along the edges to form the long, linear ridge we now call Pine Mountain. Millions of years of subsequent rain, snow, ice and wind have eroded and sculpted the ridge, and the Pine Mountain we see today is the striking result of these geologic events. The steep northwest face of the mountain is crowned with massive sandstone cliffs up to 200 feet tall along the crest of the mountain. The southeast slope of the mountain is gentler but with deep canyons or hollows carved into its flank alternating with prominent ridges. Waterfalls and deep pools are not uncommon, and large cliffs and massive outcroppings of sandstone are scattered along its length. Pine Mountain gets its name from the large stands of pine trees scattered throughout the mountain as opposed to the surrounding mountains that have little pine. This is due to the thin, droughty and sandy soils on Pine Mountain.

Scientists have long recognized Pine Mountain as biologically and ecologically important. Although few surveys have been conducted, we've already discovered that the mountain is home to at least 251 occurrences of 93 species of rare plants and animals. This includes at least three federally listed species and four species of cave beetles that are considered to be endemic (known nowhere else in the world!) to the mountain. In addition at least 24 occurrences of eight unique and rare natural communities have also been identified from the mountain.

Large blocks of contiguous forest cover the mountain slopes, ridges and hollows. These large areas of forest are important to a myriad of plants and animals that require deep, interior forest conditions for all or parts of their

lifecycles. Because of the contiguous forest that covers the long, linear ridge, the mountain offers a refugia and migratory corridor for plants and animals. Elk, deer and bear use the long mountain corridor to move between areas, as do raptors and many other birds and animals. The mountain supports many different ecological communities including mixed-mesophytic forest, hemlock-mixed forests, Appalachian oak forests, pine-oak forests, xeric Virginia pine woodlands, pine barrens, mountaintop bogs, high-quality mountain streams, springs and caves.

Interestingly, only three streams or rivers breach the mountain ridge in its 120 mile length—Clear Fork, in Tennessee just south of the Kentucky state line, Cumberland River at Pineville and Russell Fork at Breaks Interstate Park. For nearly 90 miles no stream crosses the mountain. The evenness of the ridge top is broken in places by gaps, areas that are from 300 to 700 feet below the crest and were important to early settlers as a way to get over the mountain. Amazingly, only six state or county roads cross the mountain in its entire length.

The state already has a long-term and sizable investment in this mountain, owning and managing approximately 23,520 acres or approximately 15 percent of the mountain. The beauty and scenic attractions of Pine Mountain have been realized for some time, and a number of public and private areas are protected to various degrees and for various reasons. Three state parks occur on Pine Mountain—Pine Mountain State Resort Park, Kentucky's oldest state park; Kingdom Come State Park; and Breaks Interstate Park. Two state forests, Kentenia and Kentucky Ridge also occur on the mountain, as does the Pine Mountain Wildlife Management Area and the Boone Wildlife and Recreation area. The Kentucky State Nature Preserves Commission protects five state nature preserves—Bad Branch, Kingdom Come, Hi Lewis, Blanton Forest and Pine Mountain. Several private organizations also protect land on Pine Mountain. The Kentucky Natural Lands Trust (KNLT), a private, nonprofit conservation organization, has been actively purchasing and protecting land for the Blanton Forest project since 1995. KNLT, in partnership with the Kentucky State Nature Preserves Commission, has decided to focus its efforts toward protecting the ecological and biological integrity of the entire mountain. Pine Mountain Settlement School protects several hundred acres of north face forest, and The Nature Conservancy also protects several small tracts on the mountain.

Recently, there has been even more attention given to Pine Mountain. Gov. Paul Patton and U.S. Rep. Hal Rogers, along with local government leaders, have supported the establishment of a linear park to run along the crest of Pine Mountain from Breaks Interstate Park to Pine Mountain State Resort Park. The trail would then connect to Cumberland Gap National Historic Park and the Cumberland Trail Linear Park being established in Tennessee. These developments are the result of efforts by a private, nonprofit group, the Pine Mountain Trail Conference, formed in 1998 to promote and build the trail.

The protection of Pine Mountain will be the largest and most significant landscape protection project in Kentucky's history. There are many factors that favor the success of this project. But only through cooperative partnerships of private organizations, individuals, local communities and government agencies can a project of this size be possible. The strong state, private and local support for the Blanton Forest project demonstrates the cooperative attitude that is needed for this significantly larger project. It is hoped that over the next several years major strides can be achieved to protect one of Kentucky's most impressive and significant natural areas.

For more information, see the Web sites for [*Blanton Forest*](#), [*Kentucky Natural Lands Trust*](#), [*Pine Mountain Trail*](#), [*Pine Mountain Settlement School*](#), [*Kentucky Educational Television \(Program 802\)*](#), [*Kentucky State Parks*](#), or contact [*Marc Evans*](#).

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